User's Guide

Gigabit Ethernet Switch

24-port 10/100Mbps Switch
Optional with Two 1000Mbps
Mini GBIC Fiber Modules

Quality & Reliability
Advanced Network Product

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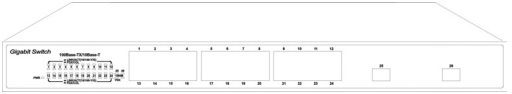
1 UNPACKING INFORMATION

Thank you for purchasing this Gigabit Switch. Before continuing, please check the contents of the product package. This product package should contain the following items:

- One Switch
- One Power Cord
- One Console Cable
- Four Rubber Feet (for desktop placement)
- One Rackmount Kit
- This User's Guide

If anything is missing, please contact your place of purchase immediately.



Switch

Power Cord

Console Cable

Rackmount Kit

Rubber Feet

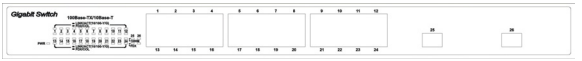
User's Guide

2 PRODUCT INTRODUCTION

2.1 Key Features

- Auto-negotiation, Half-/Full-duplex and Flow-control for Flexible and Reliable Control on Packet Transactions
- Provides Console Port for Easy Configuration
- Supports Broadcast Storm Filtering Control and Trunking Function (8 groups) for Enhanced Network-wide Reliability and Efficiency
- Supports up to 32 VLAN Groups for Port-based and 802.1Q VLAN
- Supports Per-port Bandwidth Control and Priority Tag Insert and Remove Function

2.2 The Front Panel



2.2.1 100BASE-TX TP Port

Each of the twenty-four (24) 10/100Mbps ports provide an independent bandwidth for attached devices. In addition, each port is supported by an Auto-Negotiation function that automatically senses for the attached device's fastest possible 100BASE-TX port speed, and then automatically sets the port to operate at that speed. With Auto-MDI/MDI-X function, any port can be used for connecting to another switch or hub using a straight-through CAT.5 cable.

2.2.2 1000BASE-LX Fiber Ports (optional)

Implementing long-wavelength laser transmissions, the optional fiber ports provide links of up to 550 meters using multi-mode cable and runs of 10 Kilometers when single-mode fiber cable is used.

2.2.3 1000BASE-SX Fiber Ports (optional)

Implementing short-wavelength laser transmissions, the optional fiber ports provide links of up to 220 meters over 62.5-micron multi-mode cable or 550 meters using 50-micron multi-mode fiber optic cable.

2.2.4 Cabling

For Fiber cable:

1000BASE-LX – To transmit at 1000Mbps requires Single-mode or Multi-Mode fiber cable.

1000BASE-SX –To transmit at 1000Mbps requires Multi-Mode fiber cable.

For TP (Twisted Pair) cable:

100BASE-TX - To transmit at 100Mbps requires Category 5 TP cabling

10BASE-T - When transmitting at 10Mbps Category 3, 4 or 5 TP cabling with RJ-45 sockets can be used.

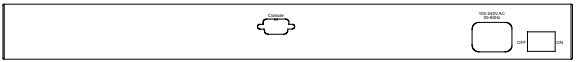
Port Type		Cable Type	Connector
Fiber	1000BASE-LX	9/125 μm Single-Mode fiber cable 50/125 μm Multi-Mode fiber cable 62.5/125 μm Multi-Mode fiber cable	LC
	1000BASE-SX	50/125 μm Multi-Mode fiber cable 62.5/125 μm Multi-Mode fiber cable	LC
TP	100BASE-TX	Category 5 TP (Using min. 2 pairs)	RJ-45
	10BASE-T	Category 3, 4 or 5 TP	RJ-45

2.2.5 Status LEDs

This Switch comes with a complete range of LEDs. The table below lists each LEDs name, color and a brief description of its function.

Name	Color	Function
PWR	Green	Lit: Power "On"
Ports 1~24 LINK/ACT	Yellow(10Mbps) Green(100Mbps)	Lit: When the port has a valid physical connection with another device. Blinks: When the port is sending or receiving data (Activity).
Ports 1~24 FD/COL	Green	Lit: When the port is set to Full-Duplex mode. Blinks: When a collision is detected in Half-Duplex mode.
Port 25,26 Fiber	Green	Lit: When the port has a valid physical connection with another device at 1000Mbps. Blink: When the port is sending or receiving data (Activity).
Ports 25,26 FD	Green	Lit: When the port is set to Full-duplex mode.

2.3 The Rear Panel



2.3.1 ON/OFF ("Reset") Switch

The power ON/OFF switch is located to the far right of the rear panel - next to the power connector.

To reset the Switch, turn the power switch "OFF", then "ON".

Note: The Switch must be reset when the MAC address table needs to be rebuilt.

2.3.2 Power Socket

The Power Socket is designed to be used with the power cord included in the product package.

- Attach the female end of the power cord to the male power connector on the rear panel.
- Attach the male end of the power cord to a grounded power outlet.

2.3.3 Console Port

Used with the supplied console cable for switch configuration.

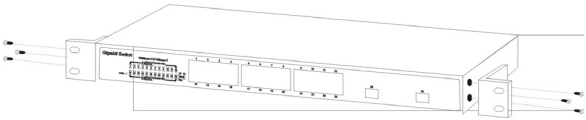
INSTALLATION

2.4 To Locate the switch on a desktop

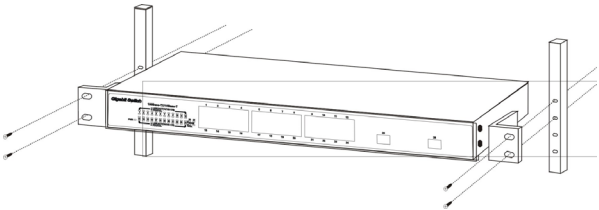
- Attach the four rubber feet included in the product package to the bottom of the Switch, one in each corner.
- Place the Switch on a clean, flat desk or tabletop close to a power outlet.
- Plug in all network connections and the power cord.
- Turn the power switch to "On".

2.5 Rackmount placement

- Attach one rackmounting bracket on each side of the Switch's front panel and secure each bracket with the provided screws.



- Use the other provided screws to secure the Switch to the rack.



3 SMART FUNCTIONS SETTINGS

3.1 Start Smart Functions

The Switch has built-in smart functions which when activated, can be used to manage the local area network (LAN) more effectively. One can also use the default setting making the Switch to operate as a dumb switch.

To configure the smart functions on the switch please follow the steps below:

· Use the supplied “RS-232” cable to connect the “console port” on the back of the switch to a computer’s serial ports COM1 or COM2.

Note: If your Windows system doesn’t support Hyper Terminal, you have to install it first.

· Power “ON” the Switch

· Execute the “HyperTerminal” program:

Start Menu → Accessories → Communications → Hyper Terminal

· Setup the connection content of Hyper Terminal:

※ In connection tag, select which “COM” port is used to connect PC and the Switch.

※ Then press the “SETUP” button, set “Bits per second” to 19200, “Data bits” to 8, “Parity” to None, “Stop bits” to 1, “Flow control” to None.

· After finishing the set-up in Hyper Terminal window, press any key to continue. Now the computer can connect to Switch and use the user interface menu to select control functions.

Item	Setting
Port	COM
Baud rate	19200
Data bits	8 bits
Parity	None
Stop bits	1
Flow control	NA

3.2 Power On Self Testing:

You can see the User Interface as below:

Please input the **default password: 123**

24-Port 10/100Mbps Switch
Optional with Two 1000Mbps Mini GBIC Fiber Modules

Password:

After entering the default username and password, the main switch configuration menu appears on the screen.

4 USE FUNCTION MENU

4.1 Main menu

1. Port Status
2. Port Configuration
3. Trunk Configuration
4. VLAN Configuration
5. QoS Configuration
6. Priority Configuration
7. Misc
8. Password

```
                              Main Menu
                              =========
--------------------------------------------------------------------------------
                              [1] Port Status
                              [2] Port Configuration
                              [3] Trunk Configuration
                              [4] VLAN Configuration
                              [5] QoS Configuration
                              [6] Priority Configuration
                              [7] Misc
                              [8] Password

--------------------------------------------------------------------------------

                                                          Version : V1.00
 Function Key
[ ]To select menu item, press item symbol. [F]Refresh Screen [X]Logout
```

4.2 Port Status

The port status screen displays the following information on each port:
Speed, Duplex, Link, Flow Control, Auto Negotiation, Trunk.

Port Status
==========

Port #	Speed	Duplex	Link	Flow Control	Auto Negotiation	Trunk
01	10M	Half	Down	Enable	Enable	
02	10M	Half	Down	Enable	Enable	
03	10M	Half	Down	Enable	Enable	
04	10M	Half	Down	Enable	Enable	
05	10M	Half	Down	Enable	Enable	
06	10M	Half	Down	Enable	Enable	
07	10M	Half	Down	Enable	Enable	
08	10M	Half	Down	Enable	Enable	

Function Key
[1/2]PageUp/PageDown [0]Return [F]Refresh Screen

Pressing [2] will show the same information for ports 9 to 16 and also for ports 17 to 24.

Port Status
==========

Port #	Speed	Duplex	Link	Flow Control	Auto Negotiation	Trunk
09	10M	Half	Down	Enable	Enable	
10	10M	Half	Down	Enable	Enable	
11	10M	Half	Down	Enable	Enable	
12	10M	Half	Down	Enable	Enable	
13	10M	Half	Down	Enable	Enable	
14	10M	Half	Down	Enable	Enable	
15	10M	Half	Down	Enable	Enable	
16	10M	Half	Down	Enable	Enable	

Function Key
[1/2]PageUp/PageDown [0]Return [F]Refresh Screen

4.3 Port Configuration

Display or change port configuration.

Port Configuration

==========

Port	Enabled	Speed advertisement	Flow Control	Rx Bandwidth	Tx Bandwidth
01	Enable	Auto	Enable	Non-control	Non-control
02	Enable	Auto	Enable	Non-control	Non-control
03	Enable	Auto	Enable	Non-control	Non-control
04	Enable	Auto	Enable	Non-control	Non-control
05	Enable	Auto	Enable	Non-control	Non-control
06	Enable	Auto	Enable	Non-control	Non-control
07	Enable	Auto	Enable	Non-control	Non-control
08	Enable	Auto	Enable	Non-control	Non-control

Function Key

[I/M/J/L]Up/Down/Left/Right [1/2]PageUp/PageDown [0]Return [F]Refresh Screen

[Space]Toggle State [R]Restart Auto Negotiation [S]Save

4.3.1 Trunk Configuration

Display or change Trunk configuration.

```
                    Trunk Configuration
                  ====================
-------------------------------------------------------------------------------
 Trunking                          | Enabled
-------------------------------------------------------------------------------
 Trunk1 (Port 01,13          )   | Disable
 Trunk2 (Port 02,14          )   | Disable
 Trunk3 (Port 03,04,15,16)   | Disable
 Trunk4 (Port 05,06,17,18)   | Disable
 Trunk5 (Port 07,08,19,20)   | Disable
 Trunk6 (Port 09,10,21,22)   | Disable
 Trunk7 (Port 11,12,23,24)   | Disable
 Trunk8 (Port 25,26          )   | Disable
-------------------------------------------------------------------------------

 Function Key
[I/M]Up/Down [0]Return [F]Refresh Screen [S]Save
[Space]Toggle State
```

This switch supports up to 8 trunk groups. Depending on individual needs, the user can select assigned 2 or 4 ports from port1 to port26 (10/100/1000 Mbps ports) to build a trunking group.

4.3.2 VLAN Configuration

Display or change VLAN configuration.

- VLAN Global Control
- VLAN Member Setup

```
                    VLAN Configuration
                  ====================
-------------------------------------------------------------------------------
                    [1] VLAN Global Control
                    [2] VLAN Member Setup

-------------------------------------------------------------------------------

 Function Key
[ ]To select menu item, press item symbol. [0]Return [F]Refresh Screen
```

VLAN Global Control

```
                    VLAN Global Control
                    ===================
-------------------------------------------------------------------------------
 Function                                          | State
-------------------------------------------------------------------------------
 VLAN Function                                      | Disable
 Unicast Packet Inter-VLAN Leaky                    | Disable
 ARP broadcast Packet Inter-VLAN Leaky              | Disable
 IP Multicast Packet Inter-VLAN Leaky               | Disable
 802.1Q VLAN tag aware                              | Disable
 Ingress Rule for Acceptable frame types | Admit all Frames
 Ingress Rule for Ingress Filtering                 | Disable
-------------------------------------------------------------------------------

 Function Key
[I/M]Up/Down [0]Return [F]Refresh Screen [S]Save
[Space]Toggle State
```

VLAN Member Setup

```
                                VLAN Member Setup     [ Display Mode ]
-------------------------------------------------------------------------------
VLAN | Port Base VLAN   |VLAN|                    Port (VLAN member)
Entry|          or          | ID |0|0|0|0|0|0|0|0|1|1|1|1|1|1|1|1|1|2|2|2|2|2|2|2
No.  | 802.1Q VLAN      |      |1|2|3|4|5|6|7|8|9|0|1|2|3|4|5|6|7|8|9|0|1|2|3|4|5|6
-----+----------------+----+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
     |                |    |  |||||||||||||||||||||||||||||
-----+----------------+----+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
     |                |    |  |||||||||||||||||||||||||||||
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     |                |    |  |||||||||||||||||||||||||||||
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     |                |    |  |||||||||||||||||||||||||||||
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     |                |    |  |||||||||||||||||||||||||||||
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 Function Key
[I/M/J/L]Up/Down/Left/Right [1/2]PageUp/PageDown [0]Return [F]Refresh [S]Save
[E]Edit Mode [Enter]Update VLAN [A]Add VLAN [D]Del VLAN [Space]Toggle/Edit State
<E> to execute VLAN entry configure, <Enter> to update VLAN table!!
```

4.4 QoS Configuration

4.4.1 TOS/Diff Serv. Priority

When TCP/IP's TOS/DiffServ (DS) based priority is applied, the Switch recognizes TCP/IP Differentiated Services Code point (DSCP) priority information from the DS-field.

4.4.2 802.1p Priority

When 802.1p tag priority is applied, the Switch recognizes 802.1Q VLAN tagged packets and extracts the 3-bit User Priority information from the VLAN tag.

4.4.3 Adapted Flow Control

The Switch can automatically turn off 802.3x Flow-control and Back-pressure Flow-control for 1~2 seconds whenever the port receives a high priority packet. Flow-control is re-enabled when no priority packets are received for 1~2 seconds.

4.4.4 Priority Weighted Ration

The Switch supports two priority level queues. The queue service rate is based on the Weighted Round Robin algorithm. The packet-based service weight ratio of high-priority and low-priority queuing can be set as 4:1, 8:1, 16:1 or 'Always high priority first'.

```
                              QoS Configuration
                             ==================

-------------------------------------------------------------------------------
 Function                                    | State
-------------------------------------------------------------------------------
 TOS/Diff Serv. Priority                   | Disable
 802.1p Priority                             | Disable
 Adapted Flow Control                        | Disable
 Priority Weighted Ration(High:Low) |   16:1
                                              |
-------------------------------------------------------------------------------
 Force Set High-Priority Port
-------------------------------------------------------------------------------
 [ ]Port01   [ ]Port05   [ ]Port09   [ ]Port13   [ ]Port17   [ ]Port21   [ ]Port 25
 [ ]Port02   [ ]Port06   [ ]Port10   [ ]Port14   [ ]Port18   [ ]Port22   [ ]Port 26
 [ ]Port03   [ ]Port07   [ ]Port11   [ ]Port15   [ ]Port19   [ ]Port23
 [ ]Port04   [ ]Port08   [ ]Port12   [ ]Port16   [ ]Port20   [ ]Port24

 Function Key
[I/M/J/L]Up/Down/Left/Right [0]Return [F]Refresh Screen [S]Save
[Space]Toggle State
```

4.5 Priority Configuration

Sets the priority QoS based on the physical port.

If a port is set as a high priority port, all packets received from that port will be treated as high priority packets.

Bit value 1: Sets that port as a high priority port

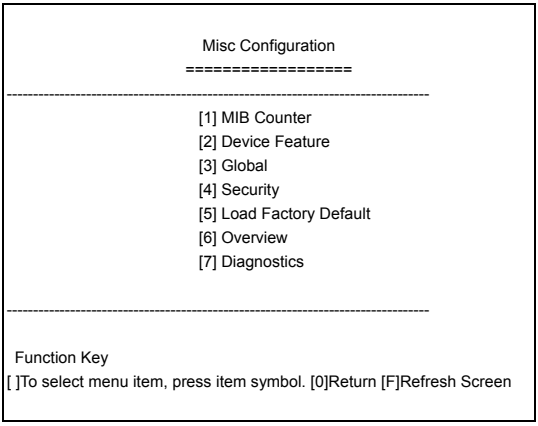
Bit value 0: Sets that port as a low priority port

```
                    Priority Configuration
                    ======================
-------------------------------------------------------------------------------
 Port | Tagging State
-------------------------------------------------------------------------------
   01   | Don't touch
   02   | Don't touch
   03   | Don't touch
   04   | Don't touch
   05   | Don't touch
   06   | Don't touch
   07   | Don't touch
   08   | Don't touch
-------------------------------------------------------------------------------

  Function Key
[I/M]Up/Down [1/2]PageUp/PageDown [0]Return [F]Refresh Screen [S]Save
[Space]Toggle State
```

4.6 Misc Configuration

1. MIB Counter
2. Device Feature
3. Global
4. Security
5. Load Factory Default
6. Overview
7. Diagnostics



4.6.1 MIB Counter

The MIB counters are 32-bit counters. After power on Reset, the counters are all reset to 0. A read access of the MIB counter will NOT reset the counter to 0.

The time before the next read of the same counter should not be longer than the counter's timeout. The timeout of the 32-bit MIB counter depends on the object type and the port speed.

Packet counter timeout is calculated based on 64-byte packets and byte counter timeout is calculated based on 1518 byte packets.

RX byte count: This counter is incremented once for every data byte of a received and forwarded packet (includes both good and bad packets).

RX packet count: This counter is incremented once for every received and forwarded packet (includes both good and bad packets).

TX byte count: This counter is incremented once for every data byte of a transmitted packet (includes both good and bad packets).

TX packet count: This counter is incremented once for every transmitted packet (includes both good and bad packets).

Drop packet count: This counter is incremented once for every drop of a received packet. Packet drop events could be due to undersize, oversize, CRC error, lack of resources, local packet, point-to-point control packet.

MIB Counter
==========

Port #	Tx Counter | Unit: Packet	Rx Counter | Unit: Packet	Drop Counter | Unit: Packet
01	0	0	0
02	0	0	0
03	0	0	0
04	0	0	0
05	0	0	0
06	0	0	0
07	0	0	0
08	0	0	0

Note: Re-start polling MIB counter when you change unit (Byte/Packet).

Function Key
[1/2]PageUp/PageDown [0]Return [F]Refresh Screen [C]Clear All Counter
[P/X]Start/Stop Polling [T]Toggle Drop/CRC/Collision [B]Toggle Byte/Packet Unit

4.6.2 Device Feature

IGMP Snooping: The Switch supports ASIC-based IGMP (Internet Group Management Protocol) snooping. This can be enabled and no other external CPU handling is required. It supports the ability to parse the IGMP control protocol packets and IP multicast data packets and learn the multicast router port and group address member ports into the multicast address table.

```
                    Device Feature
                    ==============
-------------------------------------------------------------------------------
 Function          | State
-------------------------------------------------------------------------------
 IGMP Snooping     | Disable
                   |
-------------------------------------------------------------------------------
 IP Multicast Router Port (Read Only) (Auto-refresh)
-------------------------------------------------------------------------------


-------------------------------------------------------------------------------


 Function Key
[0]Return [F]Refresh Screen [S]Save
[Space]Toggle State
```

4.6.3 Global Configuration

Half Duplex Back Pressure Flow: Set to globally enable or disable the Back-pressure Flow-control ability of all ports.

Broadcast Storm Filtering Control: Set to disable broadcast packet (DA: 'FFFFFFFFFFFF') strict flood mode and configure to loose flood mode. The control function is used under 802.3x Flow-control mode. Strict flood mode will drop broadcast packets if any destination port member is congested. Loose flood mode allows broadcast packets to be flooded to all non-congested ports.

Loop Detect: A loop-detection function is provided to notify if a network loop exists, either via a visual LED, or via a register flag for smart applications.

```
                    Global Configuration
                    ====================
-------------------------------------------------------------------------------
 Function                                | Enabled
-------------------------------------------------------------------------------
 Half Duplex Back Pressure Flow      | Enable
 Broadcast Storm Filtering Control | Disable
 Loop Detect                             | Disable
-------------------------------------------------------------------------------


 Function Key
[I/M]Up/Down [0]Return [F]Refresh Screen [S]Save
[Space]Toggle State
```

4.6.4 Security Configuration

Authentication Key: Used for security of the management operation.

The default Authentication key value is 0x2379. The Key value can be modified by the administrator via a remote control packet. A received control packet with a valid Destination MAC address but with an unmatched authentication key will be dropped with no reply. If the DA is a broadcast address or is the address of another switch, it still will be relayed.

Default: 0x2379

```
                              Security Configuration
                             ======================
--------------------------------------------------------------------------------
 Function                  | Value
--------------------------------------------------------------------------------
 Authentication Key        | 0x2379
                           |
--------------------------------------------------------------------------------
 Management Authorized Port Control
--------------------------------------------------------------------------------
 [V]Port01   [V]Port05   [V]Port09   [V]Port13   [V]Port17   [V]Port21   [V]Port 25
 [V]Port02   [V]Port06   [V]Port10   [V]Port14   [V]Port18   [V]Port22   [V]Port 26
 [V]Port03   [V]Port07   [V]Port11   [V]Port15   [V]Port19   [V]Port23
 [V]Port04   [V]Port08   [V]Port12   [V]Port16   [V]Port20   [V]Port24
--------------------------------------------------------------------------------

 Function Key
[I/M/J/L]Up/Down/Left/Right [0]Return [F]Refresh Screen [S]Save
[Space]Toggle State [Enter]Edit OK
```

4.6.5 Load Factory Default

Load the default setting.

```
                          Misc Configuration
                         ====================
--------------------------------------------------------------------------------
                          [1] MIB Counter
                          [2] Device Feature
                          [3] Global
                          [4] Security
                          [5] Load Factory Default
                          [6] Overview
                          [7] Diagnostics

--------------------------------------------------------------------------------
 Load Factory Defaults & Hardware Reset (Y/N)?

 Function Key
[ ]To select menu item, press item symbol. [0]Return [F]Refresh Screen
Load factory defaults & hardware reset. Initializing...initialization done.
```

4.6.6 Overview

It can show “Switch Name”, “Switch MAC ID”, “Chip Mode ID”, and “Vender ID”.

```
                          Overview
                         ========
--------------------------------------------------------------------------------
 Description                    | Data
--------------------------------------------------------------------------------
 Switch Name                    | Switch-A
 Switch MAC ID (Read Only)      | 52:54:4C:01:02:03
 Chip Model ID (Read Only)      | 0xFF0C
 Vender ID     (Read Only)      | 0x40414243
--------------------------------------------------------------------------------

 Function Key
[0]Return [F]Refresh Screen
[E]Edit Switch Name [Enter]Edit OK
```

4.6.7 Diagnostics

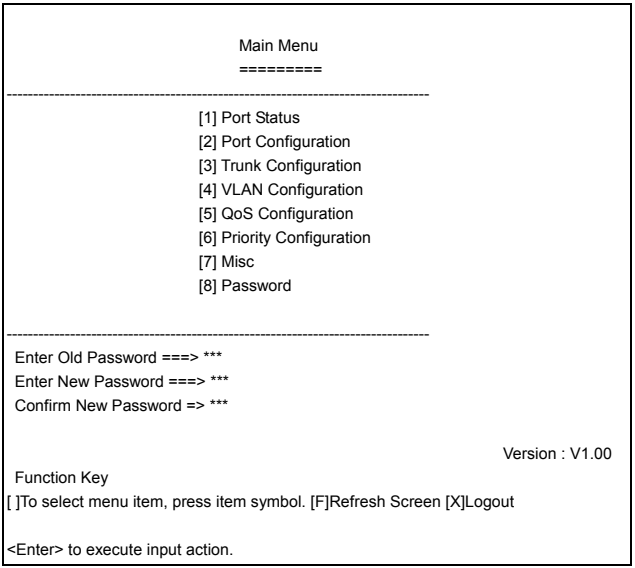
It is easy for a host to do network connection diagnostics through a simple test packet, with or without other hosts on the network. No IP assignment is required.

```
                                Diagnostics
                                ===========
--------------------------------------------------------------------------------
 Fault Information     | VLAN ID | Port (VLAN member)
--------------------------------------------------------------------------------
 Trunk Link Warning    | Trunk1(P01,13          )=>[ ]   Trunk5(P07,08,19,20)=>[ ]
                       | Trunk2(P02,14          )=>[ ]   Trunk6(P09,10,21,22)=>[ ]
                       | Trunk3(P03,04,15,16)=>[ ]   Trunk7(P11,12,23,24)=>[ ]
                       | Trunk4(P05,06,17,18)=>[ ]   Trunk8(25,26             )=>[ ]
--------------------------------------------------------------------------------
 Network Loop Fault    | P01 P02 P03 P04 P05 P06 P07 P08 P09 P10 P11 P12 P13
 Port Detected         | [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
                       |-------------------------------------------------------
                       | P14 P15 P16 P17 P18 P19 P20 P21 P22 P23 P24 G01 G02
                       | [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
--------------------------------------------------------------------------------
 Note: [X]=>1.Detected some port link down, that belonged to the trunk group.
           =>2.Some port loop detected.

 Function Key
 [F]Refresh Screen    [0]Return
```

4.7 Password

Configure the user password.


Main Menu
[1] Port Status
[2] Port Configuration
[3] Trunk Configuration
[4] VLAN Configuration
[5] QoS Configuration
[6] Priority Configuration
[7] Misc
[8] Password
Enter Old Password ===> ***
Enter New Password ===> ***
Confirm New Password => ***
Version : V1.00
Function Key
[ ]To select menu item, press item symbol. [F]Refresh Screen [X]Logout
<Enter> to execute input action.

5 HELPFUL SUGGESTIONS

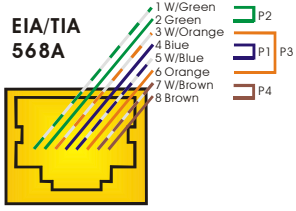
5.1 Prior to Installation

Before installing the Switch and connecting network devices, it is important to plan the network's layout. Things you should consider include:

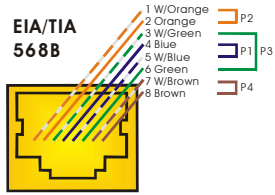
- **Dedicated Bandwidth:** File servers and other high-traffic hardware improve their performance if they have their own dedicated 10Mbps, 100Mbps, or 1000Mbps bandwidth.
- **Full-duplex:** Determine which devices support Full-duplex connections.
- **Fast Ethernet & Gigabit Ethernet:** Make sure rules for cable lengths and categories are followed. 100BASE-TX and 1000BASE-T have the same rules for cable and distance.
- **Auto-negotiation:** Devices with different speeds may be easily swapped when the other end of the cable is fixed to a port with Auto-negotiation.

5.2 Fast Ethernet & Gigabit Ethernet

1000BASE-T is called "Gigabit Ethernet". In Gigabit Ethernet, data travels ten times faster (1000Mbps) than in Fast Ethernet (100Mbps).
100BASE-TX is called "Fast Ethernet". In Fast Ethernet, data travels ten times faster (100Mbps) than in traditional Ethernet (10Mbps).
Note: If your 10BASE-T network currently uses Category 5 TP cabling, you can instantly upgrade the network to a 100BASE-TX network by changing network devices.
Note: Both 100BASE-TX and 1000BASE-T use Category 5 TP cabling. But 1000BASE-T must use four pairs twisted pair wire. You should check that the Category 5 TP cabling you are using has four pairs wire before you connect to a Gigabit device. The standard Category 5 TP cabling pin-out as the following figures:



RJ-45 Jack Front View



RJ-45 Jack Front View

5.3 MAC Address Table

Every Ethernet data packet includes both source and destination addresses. This six (6) bytes ID is called the MAC (Media Access Control) Address.
The Switch can automatically learn and store MAC addresses. However, the MAC address table is volatile: it disappears when the Switch is powered “OFF” or reset.
Note: When the network needs reconfiguration, we recommend you to turn off the power first. After all nodes have been moved, turn the Switch back "ON" to rebuild the internal MAC address table.

6 Product specifications

Model	24-Port 10/100Mbps Switch Optional with Two 1000Mbps Mini GBIC Fiber Module
Standards	· IEEE802.3: 10 BASE-T · IEEE802.3u: 100 BASE-TX · IEEE802.3z: 1000 BASE-X · IEEE802.3x: Flow-control
Ports	· 24 10/100Mbps Copper Ports · 2 1000Mbps Fiber module (Optional)
Media support	· 10 Mbps: Category 3, 4 or 5 TP · 100Mbps: Category 5 TP · 1000Mbps: Duplex LC Connector Fiber
Bandwidth	· 1000 BASE-T: 20/200/2000Mbps · 100 BASE-TX: 10/20/100/200Mbps
Forwarding/Filtering Rate	· 14880 packets/second per port@10Mbps maximum · 148800 packets/second per port@100Mbps maximum · 1488000 packets/second per port@1000Mbps maximum
Duplex Modes	· Support Auto-negotiation and Auto-MDI/MDI-X functions
LED Indicators	· One LED displays PWR status · For port 1 to 24 (10/100Mbps ports): One (1) Yellow/Green LED per port for Link/ACT One (1) LED per port for FDX/COL · For port 25, 26 (Module ports): One (1) LED per port for 1000Mbps LINK/ACT status One (1) LED per port for FDX status
Power Supply	· Full range Auto-switching · Input voltage: 100~240 +/-10%V AC/50~60Hz
Power Consumption	· 36.4 Watt maximum
Environment	· Operating temp: 0~45°C(32~113°F) · Storage temp: -20~70°C(-4~158°F) · Humidity: 10%~90% Non-condensing
Certifications	· FCC Class A · CE Mark
Dimensions	· 442 x 44 x 185mm (17.4 x 1.73 x 7.28 inches)